

THE LIFE HISTORY AND EARLY STAGES OF PLATY-
METOPIUS HYALINUS OSB.,* A JAPANESE MAPLE
LEAF-HOPPER IN NEW JERSEY.

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For the past several years the writers have noted this species as occurring more or less abundantly on Japanese maple (*Acer palmatum* Thunb.) in various places in New Jersey, principally South Orange, Plainfield, Springfield, Irvington and Rutherford. During the summer of 1918 it was very abundant at Freehold, N. J., on a form of Norway maple (*Acer platanooides* L. var. *globosum* Nich.) and the following notes are the results of observations made at that locality.

The species overwinters in the egg stage, each egg being deposited singly just under the bark close to a bud on the recently made growth of the twig. The egg is firmly embedded in the tissue which becomes brownish and somewhat hard adjoining it. The outer bark over the egg is raised and somewhat cracked and a crack is also present where the egg is inserted. Sometimes the end of an egg protrudes slightly. The egg is inserted so that its long axis is more or less at right angles to the tissue and a favorite place for deposition is the thickened part of the twig around the buds. Sometimes eggs were found in groups of two to five each egg being separated from the other, however, by considerable tissue.

At Freehold, N. J., hatching took place about the first of June and continued for almost a month. As late as early July it was possible to find first stage nymphs. From eggs hatching the first few days in June, adults appeared the first few days of July, showing that about one month is necessary for the development of the five nymphal stages. This is probably the maximum time and would be shortened by very warm weather. On account of the uneven hatching of the eggs, it is possible to find all nymphal stages and adults present during the first part of July. By the end of July practically all of the nymphs have matured and at this time and during the first of August the adults are most plentiful. Over-

* Identified by E. P. Van Duzee.

wintering eggs are then deposited. The nymphs feed on the lower leaf surfaces and seem to prefer the shaded portions of the tree. The adults are very active, move readily when the leaves are disturbed and when numerous their activity results in sounds like rain falling on the leaves.

EGG—Length 0.9 mm. Greatest width 0.18 mm. Translucent, subelliptical, somewhat flattened and not quite cylindrical, tapering slightly to both ends, one end rounded, the other end, at the surface of the tissue, truncate.

FIRST NYMPHAL STAGE—Length, including anal processes, 1.1 mm. Width of head, including eyes, 0.29 mm. Elongate-elliptical; very light yellowish white; beginning just behind the eyes there is a reddish-brown, lateral margin varying in width and extending dorsally on prothorax, posterior margin of thorax and anterior margin of abdomen and on some of posterior abdominal segments (interrupted in some specimens); antennæ slightly longer than body; head extending forward, triangular, obtusely angled in front, sides slightly rounded; eyes lateral, prominent; insect widest across eyes; sides of body slightly rounded and tapering to posterior end of abdomen; posterior end of abdomen divided into two minute, spine-like processes; abdominal lateral row of hairs similar to row on second stage; (dorsal hairs not apparent); rostrum extending to beyond bases of second pair of legs; indications of spines on tibia.

SECOND NYMPHAL STAGE—Length, including anal processes, 1.85 mm. Width of head, including eyes, 0.36 mm. Shape narrow, more elongate than that of first stage. Color varies from sordid white to light yellow. Lateral reddish-brown margin somewhat similar to that of first stage, but varying and somewhat broader. Antennæ three-fourths length of body. Head similar to that of first stage; sides of thoracic segments rounded; metathorax slightly longer than lengths of pro- and mesothorax combined; broadest across metathorax; abdomen slightly narrow at base, widening to second abdominal segment and gradually tapering to posterior part; spine-like processes one and one-half times as long as last abdominal segment and bearing several hairs; each abdominal segment bears two dorsal and two subdorsal and in addition the last three segments two lateral hairs; rostrum extending to between bases of second pair of legs; two rows of hair-like spines on outer margins of hind tibia.

THIRD NYMPHAL STAGE—Length, including anal processes, 2.9 mm. Width of head, including eyes, 0.44 mm. Somewhat similar to preceding stage; eyes more prominent; lateral reddish-brown markings more extended, in some specimens much extended on dorsal surface leaving a dorsal, median band of ground color of varying width (markings vary considerably in different individuals); anterior margin of head slightly more angulate; posterior margin of prothorax arcuate, outer posterior angles margined; mesothorax twice as long at sides as at middle; metathorax twice as long as pro- and mesothorax combined, posterior

margin subtruncate, scarcely longer at sides than at middle; abdominal hairs similar to those of fifth stage nymph; posterior abdominal spine-like processes equal in length to the two posterior abdominal segments; rostrum extending to between bases of second pair of legs.

FOURTH NYMPHAL STAGE—Length, including anal processes, 4.1 mm. Width of head, including eyes, 0.58 mm. Shape somewhat similar to that of fifth stage; dorsal and lateral reddish-brown markings somewhat similar to those of preceding stage, but more diffused, in some specimens extending further medially on dorsal surface of head and some of body segments; antennæ about one-half length of body; eyes prominent, lateral, extending slightly posteriorly; anterior margin of head subacute, sides slightly rounded; prothorax rounded in front to conform to posterior margin of head, posterior margin slightly curved and slightly wider than anterior margin; mesothorax with lateral margins decidedly elongate covering two-thirds of metathoracic lateral margins; metathorax with lateral margins somewhat elongate, covering part of first abdominal segment; abdomen broadest across second segment gradually tapering to end; length of posterior abdominal spine-like processes more than combined lengths of last two abdominal segments; spine-like processes bearing long hairs; abdominal hairs similar to those of fifth stage nymph; rostrum extending almost to bases of second pair legs; few, minute spines on legs; hind tibial spines similar to those of fifth stage.

FIFTH NYMPHAL STAGE—Length, including anal processes, 5.5 mm. Width of head, including eyes, 0.78 mm. Elongate-narrow; vertex acutely pointed and abdomen gradually tapering from anterior portion to apex; color sordid white with dorsal and lateral surfaces and wing-pads mottled with a number of orange-yellow spots often margined with interrupted reddish-brown lines, spots vary in size and some tend to form one or two dorsal rows; antennæ more than twice the length of the head, situated on front just below eyes; head acutely pointed, posterior margin arcuate, eyes prominent, extending backward, forming outer posterior angles; head as long as width of broadest portion of head across eyes; prothorax rounded in front to conform to the posterior margin of head, posterior margin slightly curved, slightly wider than widest portion of head across eyes; mesothorax about as wide as prothorax; median portion of mesothorax about one-half as long as width, sides somewhat shorter; wing-pads long, narrow and extending to posterior margin of first abdominal segment. Metathorax about as long as mesothorax; wing-pads extending slightly beyond those of mesothorax; abdomen widest across anterior end and gradually tapering to last segment which is terminated by two, long, spine-like processes, which equal in length the combined lengths of the last three segments; each abdominal segment bears near its posterior margin two dorsal and two subdorsal and beginning with the third segment, two additional lateral, fine, long hairs which are equidistant; posterior spine-like processes also bear a number of fine, long, hairs; ventral surface and legs sordid white; rostrum extending beyond bases of first pair of legs; hind tibia bearing a row of hairs on inner margin and a double row of spine-like hairs on outer margins; few minute spines on legs.

ADULT—*Platymetopius hyalinus* Osborn. This was described by Osborn in 1900 (*Ent. News*, vol. XI, p. 501) from five females and four males collected in Washington, D. C., June, 1897, by Mr. J. S. Hine, who stated that they were very abundant upon an introduced species of maple. As this description is available to most entomologists, there is no need to repeat it here. It might be stated, however, that the insect can be recognized due to the fact that it is quite distinct from any other species of the genus occurring in this country. In Osborn's description it is characterized as follows: "Elytra hyaline with dark points and fuscous bands arranged, one sub-basal, one median and one subapical. Face bright, sulphur-yellow, vertex, pronotum and scutellum yellow, with some infuscations or greenish washes. Length, female, 5.5 mm.; male, 4.25 mm."

Van Duzee, in his "Revision of the American Species of *Platymetopius*," (*Annals Ent. Soc. Amer.*, vol. 3, 1910, p. 218), states that "this insect is quite aberrant in its genus by its uniformly whitish hyaline elytra crossed by three narrow fuscous bands. Prof. Osborn described it from a series taken from an imported tree at Washington, D. C., and strongly suspected that it might be an exotic form introduced from material added to the Botanical Gardens there. In that case it probably has become acclimated as Mr. C. W. Johnson has sent me a specimen he took near Philadelphia."

While Pennsylvania and the District of Columbia are the only localities listed in Van Duzee's Catalogue, it probably occurs in many other eastern places in view of the wide distribution of the Japanese maple as an ornamental tree. We believe that Prof. Osborn's surmise that this is an introduced species is correct and that it has been brought into this country on imported maples. This is quite possible in view of the fact that overwintering takes place in the egg stage in the twigs.